Structural Heart Disease, Other (TCTAP A-117 to TCTAP A-119)

TCTAP A-117

Combined Transcatheter Aortic Valve Implantation (TAVI) and Stenting of the Coronary Arteries in Patients with Severe Aortic Stenosis

David G. Iosseliani, Djamil Asadov, Igor Arabadzhyan, Vladislav Kriukov, Elena Kovaleva, Anna Rogatova
City Center of Intervent. Cardioangiology, Moscow, Russian Federation

Background: To study the effectiveness and safety of combined PCI and aortic valve implantation in patients at high surgical risk.
Methods: Combined correction of aortic stenosis and PCI were performed in 15 patients. The average age of patients was 76,3 ± 3.9 years. Mean area of aortic valve orifice was 0.53 ± 0.13 mm. Maximal transvalvular gradient was 99.7 ± 20.2 mm Hg. Four patients had single-vessel disease, the remaining patients had multivessel disease, in two cases – with the lesion of the left main coronary artery. EuroScore>20%, STS>10%, Syntax score = 18,3 ± 11,5.
Results: The first stage of procedure was coronary stenting (2,2 ± 0,75 stents per patient), followed by TAVI. Mean duration of the procedure was 126.3 ± 31.3 min. The average volume of the contrast medium was 322.3 ± 74.6 ml, the time of scopy– 36.6 ± 9.6 min. Post-TAVI maximal transvalvular gradient was 15.4 ± 5 mm Hg, regurgitation – 1,2 ± 0,5. There were no major intra- and perioperative complications.
Conclusion: Transcatheter aortic valve implantation combined with percutaneous coronary interventions can be successfully used for the management of patients at extremely high risk for open-heart surgery and is the only method of treatment for them.

TCTAP A-118

Improvement of LV Systolic and Diastolic Function 6-month After Successful Transcatheter Aortic Valve Replacement (TAVR)

William K. F. Kong, Michael Liang, Kyu Kyu, K. K. Poh
The National University Heart Centre, Singapore, Singapore

Background: We prospectively evaluate the hemodynamic consequences of transcatheter aortic valve replacement (TAVR) with the Edward Sapien XT prosthesis andits effect on left ventricular systolic and diastolic function.
Methods: From April 2011 to April 2013, symptomatic patients with severe aortic stenosis (aortic valve area <1cm2) and underwent TAVR were included. Aortic valve prosthesis was implanted via transfemoral, transapical and transaortical methods. All procedures were guided by transeosphageal echocardiography. Clinical evaluation and evaluation of LV systolic and diastolic function was performed at baseline and at six-months after TAVR. Echocardiography included standard 2D and Doppler analysis of global systolic and diastolic function as well as Tissue Doppler echocardiography.
Results: Thirty patients successfully underwent TAVR (66% were male). The mean age was 79.
Conclusion: After successful TAVR for severe AS, LV systolic and diastolic function was remarkably improved in most patients after 6 months. These changes will have relevant clinical prognostic value.

TCTAP A-119

Catheter-based Patent Foramen Ovale Closure Eliminated Post-dive Arterial Bubbles in Scuba Divers

Jakub Honek[1], Martin Sramek[1], Ludek Sefc[2], Jaroslav Januska[3], Jiri Fiedler[1], Martin Horvath[1], Ales Tomek[1], Stepan Novotny[4], Tomas Honek[1], Josef Veselka[1]
[1]Motol University Hospital, Prague, Czech Republic, [2]1st Faculty of Medicine, Prague, Czech Republic, [3]Trinec Podlesi Hospital, Trinec, Czech Republic, [4]Kladno Regional Hospital, Kladno, Czech Republic

Background: Patent foramen ovale (PFO) is a risk factor of decompression sickness (DCS) in divers due to paradoxical embolization of bubbles. It has been suggested that catheter-based PFO closure might prevent the arterialization of bubbles and reduce the risk of DCS. However, there are currently no data confirming its effect on post-dive reduction of arterial gas emboli. The aim of this study was to test the effect of catheter-based PFO closure on the occurrence of arterial bubbles after simulated dives.
Methods: A total of 183 consecutive divers were screened for PFO at our center. Significant PFO (grade 3 according to the International Consensus Criteria) was found in total of 47 divers. Twenty divers (38.8+/-9.5 yrs, 80% males) with a history of unprovoked DCS underwent catheter-based PFO closure (closure group). The other 27 divers (33.0+/-6.6 yrs, 81% males) were either asymptomatic or did not agree with PFO closure, or their PFO closure had not been performed prior to study onset (PFO group). All divers were examined after a simulated dive in a hyperbaric chamber: thirty-four divers (19 PFO group, 15 closure group) performed a dive to 18 m for 80 min, and thirteen divers (8 PFO group, 5 closure group) performed a dive to 50 m for 20 min. Within 60 min after surfacing, presence of venous and arterial bubbles was assessed. Venous bubbles were assessed by pulse wave Doppler in the right ventricular outflow tract from the parasternal short axis view and their detection was performed for 1 min. Arterial bubbles were detected by means of transcranial color-coded sonography in the middle cerebral artery, bubbles were detected for 1 min during native breathing and subsequently three times for 40 s after a Valsalva maneuver. Tests were considered positive if one or more bubbles were detected.
Results: After the 18-m dive, venous bubbles were detected in 74% of divers in the PFO group vs. 80% in the closure group (p=1.0), and arterial bubbles were detected in 32% vs. 0%, respectively (p=0.02). After the 50-m dive, venous bubbles were detected in 88% vs. 100%, respectively (p=1.0) and arterial bubbles were detected in 88% vs. 0%, respectively (p<0.01). The typical appearance of post-dive venous bubbles in the right heart chambers and no arterial bubbles in the left heart chambers in a diver with a PFO closure device is shown in Figure 1.

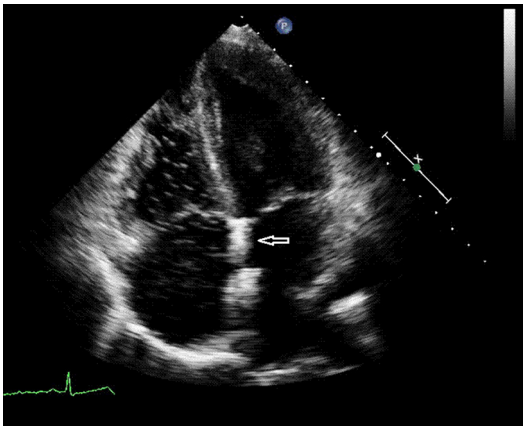

Figure 1. Transthoracic echocardiography: post-dive venous bubbles in right heart chambers in a patient after catheter-based patent foramen ovale closure.

Conclusion: The present study is the first study to demonstrate the effect of catheter-based PFO closure on the occurrence of post-dive arterial bubbles. In our study, no difference was found in the occurrence of venous bubbles between the PFO and closure groups. However, in the closure group no arterial bubbles were detected. Therefore, we suggest that i) the presence of a PFO plays a key role in paradoxical embolization of venous bubbles after scuba dives, ii) closure strategy should have a role in the prevention of unprovoked DCS recurrence in divers.

Transradial Intervention (TCTAP A-120 to TCTAP A-124)

TCTAP A-120

Intra-arterial Anti-spasm Regimens to Prevent Radial Artery Spasm During Transradial Coronary Angiography

Babu Ezhumalai[1], Santhosh Satheesh[2], Balachander Jayaraman[2]
[1]Sri Venkateshwaraa Medical College Hospital and Research centre, Puducherry, India, [2]Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry, Puducherry, India

Background: The development of spasm of radial artery is a critical problem encountered during transradial catheterization often leading to switching over to transfemoral route. Various operators have used different kinds of regimens to prevent the occurrence of radial artery spasm. This study was done to analyze the effect of different anti-spasm regimens in preventing the development of radial artery spasm during transradial coronary angiography.
Methods: Patients undergoing transradial coronary angiography were included in this study. The radial sheath was inserted and flushed with one of the following cocktail regimens along with 50 units/kg of unfractionated heparin diluted in 10 ml of saline. The various cocktails used were (i) Saline, (ii) Nitroglycerin 200µg, (iii) Nitroglycerin 200µg with Verapamil 2.5mg, (iv) Nitroglycerin 200µg with Diltiazem 5mg, (v) Nicorandil 4mg. Hemodynamic parameters, ECG and other side effects were monitored. Clinically, the severity of radial artery spasm was graded from 0 to 4 with Grade 0: No spasm and Grade 4: Painful spasm with severe resistance leading to entrapment of catheter and/or sheath. Angiographically, the severity of radial artery spasm was graded as mild, moderate and severe.
Results: A total of 1250 patients were included in this study. There were 250 patients in each group. All the groups were age and sex matched. Compared to saline, the occurrence of clinical and angiographic radial artery spasm was significantly low with all cocktail

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